CLAIMS

1. A method of encoding video, the method comprising the steps of:

providing a video signal;

spatially decomposing the video signal into at least two signals of different frequency sub-bands;

applying an individualized motion compensated temporal filtering scheme to each sub-band signal; and

texture coding each of the motion compensated temporally filtered subband signals.

2. The method according to claim 1, wherein the spatially decomposing step is performed by wavelet filtering.

3. The method according to claim 1, wherein the video signal defines a plurality of frames, the spatially decomposing step including spatially decomposing each of the frames of the video signal into the at least two signals of different frequency sub-bands.

4. The method according to claim 1, wherein prior to the step of applying a motion compensated temporal filtering scheme, further comprising the step of breaking each of the sub-band signals into a signal representing a group of temporal frames having a certain content.

5. The method according to claim 4, wherein the individualized motion compensated temporal filtering scheme applied to each sub-band signal is individualized according to the content of the group of frames.

6. The method according to claim 1, wherein prior to the step of applying a motion compensated temporal filtering scheme, further comprising the step of breaking each of the sub-band signals into a signal representing a group of frames, the number of the frames in at least one of the group of frames signals being adaptively determined.

7. The method according to claim 1, wherein the individualized motion compensated temporal filtering scheme applied to each sub-band signal is individualized according to a spatial resolution of the sub-band signal.

8. The method according to claim 1, wherein the step of applying an individualized motion compensated temporal filtering scheme to each sub-band signal is performed by using variable accuracy motion estimation, which is dependent of signal contents.

9. The method according to claim 1, wherein the individualized motion compensated temporal filtering scheme applied to each sub-band signal is individualized according to a temporal correlation of the sub-band signal.

10. The method according to claim 1, wherein the step of applying an individualized motion compensated temporal filtering scheme to each sub-band signal is performed by using an individualized interpolation filter for maximizing motion estimation performance.

11. The method according to claim 1, wherein the individualized motion compensated temporal filtering scheme applied to each sub-band signal is individualized according to a characteristic of the sub-band signal.

12. The method according to claim 1, wherein the step of applying an individualized motion compensated temporal filtering scheme to each bandwidth signal is performed by using a temporal filter selected from the group consisting of multi-directional temporal filters and unidirectional temporal filters.

13. The method according to claim 1, wherein the step of applying an individualized motion compensated temporal filtering scheme to each sub-band signal includes the steps of:

shifting the sub-band signal, which is from a phase of wavelet coefficients generated in the spatially decomposing step, at least three times to generate three additional phases of wavelet coefficients;

interleaving the four phases of wavelet coefficients to produce an extended reference frame; and

estimating motion using the extended reference frame.

14. The method according to claim 13, wherein the spatial decomposing step is performed to provide a plurality decomposition levels, each decomposition level comprising a different frequency sub-band and wherein the step of applying the individualized motion compensated temporal filtering scheme, by performing the shifting, interleaving and estimating steps, is recursively applied for each decomposition level.

15. The method according to claim 1, wherein the step of applying an individualized motion compensated temporal filtering scheme to each sub-band signal includes the steps of:

shifting the sub-band signal, which are from a phase of wavelet coefficients generated in the spatially decomposing step, at least three times to generate three additional phases of wavelet coefficients;

combining the four phases of wavelet coefficients to produce an extended reference frame;

generating a fractional pel from the extended frame; and

estimating motion according to the fractional pel.

16. The method according to claim 14, wherein the spatial decomposing step is performed to provide a plurality decomposition levels, each decomposition level comprising a different frequency sub-band and wherein the step of applying the individualized motion compensated temporal filtering scheme, by performing the shifting, combining, generating and estimating steps, is recursively applied for each decomposition level.

17. A memory medium for encoding video, the memory medium comprising:

code for spatially decomposing a video signal into at least two signals of different frequency sub-bands;

code for applying an individualized motion compensated temporal filtering scheme to each sub-band signal; and

code for texture coding each of the motion compensated temporally filtered subband signals.

18. A device for encoding video, the device comprising:

a wavelet transform unit for spatially decomposing a video signal into at least two signals of different frequency sub-bands;

a motion compensated temporal filtering unit for each of the at least two sub-band signals, each motion compensated temporal filtering unit applying an individualized motion compensated temporal filtering scheme to its associated sub-band signal; and

a texture coding unit for each of the at least two sub-band signals, each texture coding unit texture coding its associated motion compensated temporally filtered subband signal.

19. The device according to claim 18, further comprising a partitioning unit for each of the sub-band signals, each partitioning unit breaking its associated sub-band signal into a signal representing a group of temporal frames having a certain content.

20. The device according to claim 18, wherein each motion compensated temporal filtering unit includes:

a low band shifting unit for shifting its associated sub-band signal, which is from a phase of wavelet coefficients, at least three times to generate three additional phases of wavelet coefficients; and

an interleaving unit for interleaving the four phases of wavelet coefficients to produce an extended reference frame.

21. The device according to claim 20, wherein each motion compensated temporal filtering unit further includes an interpolating unit for generating a fractional pel from the extended frame.

22. The device according to claim 21, wherein each motion compensated temporal filtering unit further includes a motion estimation unit for estimating motion according to the fractional pel.

23. A method of decoding video, the method comprising the steps of:

decoding a signal including at least two encoded motion compensated temporally filtered, different frequency sub-band signals of a video signal;

independently applying inverse motion compensated temporal filtering to each of the decoded at least two sub-band signals;

spatially recomposing the at least two sub-band signals; and

reconstructing the video signal from at least one of the at least two spatially recomposed sub-band signals.

24. The method according to claim 23, wherein the video signal is reconstructed from all of the at least two spatially recomposed sub-band signals.

25. A memory medium for decoding video, the memory medium comprising:

code for decoding a signal including at least two encoded motion compensated temporally filtered, different frequency sub-band signals of a video signal;

code for independently applying inverse motion compensated temporal filtering to each of the decoded at least two sub-band signals;

code for spatially recomposing the at least two sub-band signals; and

code for reconstructing the video signal from at least one of the at least two spatially recomposed sub-band signals.

26. A device for decoding video, the device comprising:

a texture decoding unit for decoding a signal including at least two encoded motion compensated temporally filtered, different frequency sub-band signals of a video signal;

an inverse motion compensated temporal filtering unit for each of the at least two sub-band signals, each inverse motion compensated temporal filtering unit independently applying inverse motion compensated temporal filtering to its associated decoded at least two sub-band signal;

an inverse wavelet transform unit for spatially recomposing the at least two sub-band signals; and

a video reconstructing unit for reconstructing the video signal from at least one of the at least two spatially recomposed sub-band signals.